

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:	Dean L. Engelhardt et al.	)	
Serial No.	08/486,069	)	Group Art Unit: 1807
Filed:	June 7, 1995	)	Examiner: Not Yet Known
Title:	NUCLEIC ACID HYBRIDIZATION DETECTION METHOD (AS FIRST AMENDED)	)	Prev. Ex'r: Ardin Marschel, Ph.D. Prev. Group Art Unit: 1807

575 Fifth Avenue, 18th Floor  
New York, New York 10017  
September 28, 1995

**FILED BY EXPRESS MAIL**

Hon. Commissioner of Patents and Trademarks  
Washington, D.C. 20231

**INFORMATION DISCLOSURE  
STATEMENT UNDER 37 C.F.R. §§1.56 & 1.97-1.98**

Dear Sirs:

Pursuant to the provisions of 37 C.F.R. §§1.97-1.98, and in full compliance with their duty of disclosure under 37 C.F.R. §1.56, Applicants, through their attorney, are bringing the following one hundred and two (102) documents to the attention of the U.S. Patent and Trademark Office and the Examiner handling their above-identified application:

1. Becker et al., "Irreversible Inhibition of Biotin Transport in Yeast by Biotinyl-p-nitrophenyl Ester," Proc. Nat'l. Acad. Sci. (USA) **68**:2604-2607 (1971)<sup>1</sup> [Exhibit 1];
2. Halloran et al., "The Preparation of Nucleotide-protein Conjugates: Carbodiimides as Coupling Agents," J. Immunol., **96**:373-378 (1966)<sup>1</sup> [Exhibit 2];
3. Manning et al., "A New Method of in situ Hybridization," Chromosoma, **53**:107-117 (1975)<sup>1</sup> [Exhibit 3];
4. Kropinski et al., Gen. Virol., **6**:85 (1970)<sup>1,5</sup> [Exhibit 4]

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EXPRESS MAIL CERTIFICATE	
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I hereby certify that this paper and the attachments herein are being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.56 on the date indicated above and is addressed to the Commissioner of Patents and Trademarks, Washington DC 20231	
<i>[Signature]</i> Ronald C. Fedus Reg. No. 32567	SEP 28 1995 Date

5. Kropinski et al., "5-(4-Aminobutylaminomethyl) uracil, an Unusual Pyrimidine from the Deoxyribonucleic Acid of Bacteriophage  $\phi$ W-14," Biochemistry, 12:151-157 (1973)<sup>1</sup> [Exhibit 5];
6. Bhat, Syn. Proc. in Nucleic Acid Chem., Vol. I., p. 521 (1968)<sup>1,5</sup> [Exhibit 6];
7. Torrence et al., "5-O-Alkylated Derivatives of 5-Hydroxy-2'-deoxyuridine as Potential Antiviral Agents. Anti-Herpes Activity of 5-Propynyloxy-2'-deoxyuridine," J. Med. Chem., 21:228-231 (1978)<sup>1</sup> [Exhibit 7];
8. Michelson, "Synthesis Of Nucleotide Anhydrides By Anion Exchange," Biochem. Biophys. Acta., 91:1-13 (1964)<sup>1</sup> [Exhibit 8];
9. Cech et al. "A facile synthesis of 5-(perfluoroalkyl)-pyrimidines," Nucl. Acids Res., 2:2183-2192 (1979)<sup>1</sup> [Exhibit 9];
10. Schram et al., "Pyrrolopyrimidine Nucleosides VIII. Synthesis of Sangivamycin Derivatives Possessing Exocyclic Heterocycles at C5," J. Carbohydrate, Nucleosides, Nucleotides, 1:39-54 (1974)<sup>1</sup> [Exhibit 10];
11. Bleackley et al., "The preparation of 5-cyanouracil and 5-cyano-2'-deoxyuridine from the corresponding 5-iodo derivative and cuprous cyanide," Nucl. Acids Res., 2:683-690 (1975)<sup>1</sup> [Exhibit 11];
12. Roberts et al., "Uridine and Cytidine Derivatives," J. Am. Chem. Soc. 74:668-669 (1952)<sup>1</sup> [Exhibit 12];
13. Bauman et al., "Rapid and High Resolution Detection of in situ Hybridisation to Polytene Chromosomes Using Fluorochrome-labeled RNA," Chromosoma, 84:1-18 (1982)<sup>1</sup> [Exhibit 13];
14. Bauman et al., "A new method for fluorescence microscopical localization of specific DNA sequences by in situ hybridization of fluorochrome-labelled RNA," Exp. Cell Res., 128:485-490 (1980)<sup>1</sup> [Exhibit 14];

15. Gerhard et al., "Localization of a Unique Gene by Direct Hybridization in situ," Proc. Natl. Acad. Sci. ( USA), 78:3755-3759 (1981)<sup>1</sup> [Exhibit 15];
16. Miller, J., "Experiment 52, Assay of the lac Repressor by Binding to Operator," Experiments in Molecular Genetics, Cold Spring Harbor Laboratory pp. 367-370 (1972)<sup>1</sup> [Exhibit 16];
17. Ueda et al., "Conversion of Uridine Nucleotides to the 6-Cyano Derivatives: Synthesis of Orotidylic Acid (Nucleosides and Nucleotides)," J. Carbohydr., Nucleosides, Nucleotides, 5:261-271 (1978)<sup>1</sup> [Exhibit 17];
18. Brunngraber et al., "Purification and Properties of a Nucleoside Phosphotransferase from Carrot," J. Biol. Chem., 242:4834-4840 (1967)<sup>1</sup> [Exhibit 18];
19. Wilchek et al., "Modification of the Carboxyl Groups of Ribonuclease by Attachment of Glycine or Alanylglycine," Biochemistry, 6:247-252 (1967)<sup>1</sup> [Exhibit 19];
20. Vogt, "Purification and Properties of S<sub>1</sub> Nuclease from Aspergillus," Methods in Enzymology, 65:248-255 (1980)<sup>1</sup> [Exhibit 20];
21. Ward et al., U.S. Patent No. 4,711,955, issued December 8, 1987 (the application of which is a continuation of U.S. Patent Application Serial No. 255,223, filed April 17, 1981 and abandoned<sup>1</sup>) [Exhibit 21];
22. Monod et al., "On the Nature of Allosteric Transitions: A Plausible Model," J. Mol. Biol., 12:88-118 (1965)<sup>1</sup> [Exhibit 22];
23. Pastan et al., "Cyclic Adenosine Monophosphate in Bacteria," Science, 169:339-344 (1969)<sup>1</sup> [Exhibit 23];
24. Gilbert et al., "The Nucleotide Sequence of the lac Operator," Proc. Natl. Acad. Sci. (USA), 70:3581-3584 (1973)<sup>1</sup> [Exhibit 24];

25. Pardee, "Membrane Transport Proteins," Science, 162:632-637 (1968)<sup>1</sup> [Exhibit 25];
26. Hazelbaur et al., "Role of the Galactose Binding Protein in Chemotaxis of Escherichia coli toward Galactose," Nature New Bio., 230:101-104 (1971)<sup>1</sup> [Exhibit 26];
27. Caruthers, Second Annual Congress for Recombinant DNA Research, Los Angeles, CA (1982)<sup>1,5</sup> [Exhibit 27];
28. Stavrianopoulos, U.S. Patent No. 4,707,440, issued November 17, 1987<sup>2,7</sup> [Exhibit 28];
29. Robins et al., U.S. Patent No. 4,038,480, issued July 26, 1977<sup>2,7,8</sup> [Exhibit 29];
30. Carrico et al., U.S. Patent No. 4,213,893, issued July 22, 1980<sup>2,7,8,23</sup> [Exhibit 30];
31. Carrico et al., U.S. Patent No. 4,255,566, issued March 10, 1981<sup>2,4,7,8,21,23</sup> [Exhibit 31];
32. Gohlke et al., U.S. Patent No. 4,378,458, issued March 29, 1983<sup>2,7,8,19</sup> [Exhibit 32];
33. Bückmann, U.S. Patent No. 4,443,594, issued April 17, 1984<sup>2,7,8</sup> [Exhibit 33];
34. Japanese Patent No. 53-133283 (Agency Ind. Sci.) (November 1978)<sup>2,8,26</sup> [Exhibit 34];
35. Imahori et al., U.K. Patent Application No. GB 2 036 029 A, published June 25, 1980<sup>2,8</sup> [Exhibit 35];
36. Japanese Patent No. 57-11999 (Chugai Pharm.) (January 1982)<sup>2,8,26</sup> [Exhibit 36];

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37. Japanese Patent No. 60-96610 (Agency Ind. Sci.) (May 1985)<sup>2,6,8</sup> [Exhibit 37];
38. Ward et al., European Patent No. 0 063 879 B1, granted November 23, 1989<sup>2,4,8,14,15,16,18,19</sup> [Exhibit 38];
39. Carrico et al., U.K. Patent Application No. GB 2 040 943 A, published September 3, 1980<sup>2,4,21</sup> [Exhibit 39];
40. Langer et al., "Enzymatic synthesis of biotin-labeled polynucleotides: Novel nucleic acid affinity probes," Proc. Natl. Acad. Sci. (USA), 78:6633-6637 (1981)<sup>2,4,9,18,22</sup> [Exhibit 40];
41. Nishimura et al., "Synthetic Nucleosides and Nucleotides. XV. 1) 5-Dimethylamino-2-oxidoisoquinolin-1-yl Diazomethane: A Novel Water-Soluble Fluorescent Labelling Agent for Nucleotides," Chem. Pharm Bull., 28:1695-1703 (1980)<sup>2,4</sup> [Exhibit 41];
42. Kwah et al., "Myocardial Infarct Imaging of Antibodies to Canine Cardiac Myosin with Indium-111-Diethylenetriamine Pentaacetic Acid," Science 209:295-297 (1980)<sup>3</sup> [Exhibit 42];
43. Benovic et al., U.S. Patent No. 4,460,772, issued July 17, 1984<sup>8</sup> [Exhibit 43];
44. Torrence et al., "Interferon Inducers: General Survey and Classification," Methods in Enzymology, Vol. 78, Interferons, Part A, pp. 291-299 (Pestka, Edu.), Academic Press, New York, 1981<sup>10</sup> [Exhibit 44];
45. Harnden, U.S. Patent No. 3,931,397, issued January 6, 1976<sup>11</sup> [Exhibit 45];
46. Lampson et al., U.S. Patent No. 4,124,702, issued November 7, 1978<sup>11</sup> [Exhibit 46];
47. Arimura et al., U.S. Patent No. 4,313,938, issued February 2, 1982<sup>11</sup> [Exhibit 47];

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48. Ward et al., U.S. Patent No. 4,711,955, issued December 8, 1987<sup>9, 12, 15, 18, 22, 24</sup>  
[Exhibit 48][NOTE THAT ONLY THE FIRST PAGE OF THIS PATENT IS  
SUBMITTED AS EXHIBIT 48 HEREWITH; A COMPLETE COPY OF THIS  
PATENT IS SUBMITTED AS EXHIBIT 21 ABOVE];
49. Falkow et al., U.S. Patent No. 4,358,535, issued November 9, 1982<sup>12, 14, 15, 16, 17, 24</sup> [Exhibit 49];
50. Engelhardt et al., U.S. Patent No. 5,260,433, issued November 9, 1993<sup>13</sup>  
[Exhibit 50];
51. Kourilsky et al., United Kingdom Patent Application No. GB 2 019 408 A,  
published October 31, 1979<sup>14, 16</sup> [Exhibit 51];
52. Kourilsky et al., U.S. Patent No. 4,581,333, issued April 8, 1986<sup>16</sup> [Exhibit 52];
53. Siebenlist et al., "Contacts between Escherichia coli RNA polymerase and an  
early promoter of phage T7," Proc. Natl. Acad. Sci. (USA), 77:122-126, January  
1980<sup>17</sup> [Exhibit 53];
54. Maxam et al., "A New Method for Sequencing DNA," Proc. Natl. Acad. Sci.  
(USA), 74:560-564, 1977<sup>17</sup> [Exhibit 54];
55. Heggeness et al., "Avidin Binds To Condensed Chromatin," Stain Technol.  
52:165-169 (1977)<sup>18</sup> [Exhibit 55];
56. Heggeness et al., "Use of the Avidin-Biotin Complex For the Localization of  
Actin and Myosin with Fluorescence Microscopy," J. Cell Biol. 73:783-788  
(1977)<sup>18</sup> [Exhibit 56];
57. Bayer et al., "The Use of the Avidin-Biotin Complex as a Tool in Molecular  
Biology," Methods of Biochem Analysis 26:1-45 (1980)<sup>18</sup> [Exhibit 57];
58. Hoffman et al., "Iminobiotin affinity columns and their application to retrieval of  
streptavidin," Proc. Natl. Acad. Sci. 77 :4666-4668 (1980)<sup>18</sup> [Exhibit 58];

59. Pardue et al., "Nucleic Acid Hybridization to the DNA of Cytological Preparations," Methods in Cell Biol. 10:1-16 (1975)<sup>18</sup> [Exhibit 59];
60. Bergstrom et al., "C-5 Substituted Pyrimidine Nucleosides. 2. Synthesis via Olefin Coupling to Organopalladium Intermediates Derived from Uridine and 2'-Deoxyuridine," JACS 100:8106-8112 (1978)<sup>18</sup> [Exhibit 60];
61. Bigge et al., "Palladium-Catalyzed Coupling Reactions of Uracil Nucleosides and Nucleotides," JACS 102:2033-2038 (1979)<sup>18</sup> [Exhibit 61];
62. Rigby et al., "Labeling Deoxyribonucleic Acid to High Specific Activity in Vitro by Nick Translation with DNA Polymerase I," J. Mol. Biol. 113:237-251 (1977)<sup>18</sup> [Exhibit 62];
63. Bourguignon et al., "DNA of Minute Virus of Mice: Self-Priming, Nonpermuted Single-Stranded Genome with a 5'-Terminal Hairpin Duplex," J. Virol. 20:290-306 (1976)<sup>18</sup> [Exhibit 63];
64. Miller et al., "A general method for permeabilizing mono-layer and suspension cultured animal cells," Exp. Cell Res. 120:421-425 (1979)<sup>18</sup> [Exhibit 64];
65. Miyoshi et al., U.S. Patent No. 4,605,735, issued August 12, 1986<sup>19</sup> [Exhibit 65];
66. Japanese Patent No. 60-169495, issued September 1985<sup>19, 26</sup> [Exhibit 66];
67. Helene et al., European Patent Application No. 0 169 787 A1, published January 29, 1986<sup>19, 26</sup> [Exhibit 67];
68. Klevan et al., PCT Patent Application No. WO 86/02929, published May 22, 1986<sup>19</sup> [Exhibit 68];
69. Japanese Patent No. 57-42632, issued March 1986<sup>19, 26</sup> [Exhibit 69];
70. Japanese Patent 61-103824, issued May 1986<sup>19, 26</sup> [Exhibit 70];

71. Suhadolnik et al., U.S. Patent No. 9,708,935, issued November 24, 1987<sup>20</sup> [Exhibit 71];
72. Rapaport, U.S. Patent No. 4,880,918, issued November 14, 1989<sup>20</sup> [Exhibit 72];
73. Klevan et al., U.S. Patent No. 4,828,979, issued May 9, 1989<sup>25</sup> [Exhibit 73];
74. Musso et al., U.S. Patent No. 4,833,251, issued May 23, 1989<sup>25</sup> [Exhibit 74];
75. Carrico et al., European Patent No. 0 027 631 B1, granted May 5, 1982<sup>25</sup> [Exhibit 75];
76. Urdea et al., European Patent Application No. 0 225 807 A2, published June 16, 1987<sup>25</sup> [Exhibit 76];
77. Schulman et al., "Attachment of protein affinity-labeling reagents of variable length and amino acid specificity to E. coli tRNA<sup>Met</sup>," Nuc. Acid Res., 9:1203-1217, (1981)<sup>25</sup> [Exhibit 77];
78. Langer, et al., "Enzymatic synthesis of biotin-labeled polynucleotides: Novel nucleic acid affinity probes," Chemical Abstracts, Vol. 96, No. 7, February 15, 1982, pg. 207, Abstract No. 47771z<sup>4, 21</sup> [Exhibit 78];
79. Clechet, P. et al., "Trace analysis of barium in water by means of cation resin-loaded paper and x-ray fluorescence analysis," Chemical Abstracts, Vol. 94, No. 25, June 22, 1981, pg. 366, Abstract No. 214298t<sup>4</sup> [Exhibit 79];
80. Duke et al., "Conformational change accompanying modification of myosin ATPase," Chemical Abstracts, Vol. 66, No. 9, February 27, 1967, pg. 3326, Abstract No. 35045h<sup>4</sup> [Exhibit 80];
81. Duke et al., "Conformational change accompanying modification of myosin ATPase," Biochem. Biophys. Acta, 126:600-603 (1966)<sup>4</sup> [Exhibit 81];



82. Secrist, III et al., U.S. Patent No. 3,960,840, issued June 1, 1976<sup>4, 21</sup>  
[Exhibit 82];
83. Boguslaski et al., U.S. Patent No. 4,230,797, issued October 28, 1980<sup>4, 21</sup>  
[Exhibit 83];
84. Kathawala et al., "Darstellung von Desoxy-oligonucleotiden Mit 2'.3'-[2.4-Dimethoxy-benzyliden]-uridin als Phosphat-Schutzgruppe," Liebigs Ann. Chem., 712:195-200 (1968)<sup>4, 27</sup> [Exhibit 84];
85. Trouet et al., "Targeting of antitumor and antiprotozoal drugs by covalent linkage to protein carriers," Chemical Abstracts, Vol. 98, No. 9, February 28, 1983, pg. 334-335, Abstract No. 77997m<sup>4</sup> [Exhibit 85];
86. Trouet et al., "Targeting of antitumor and antiprotozoal drugs by covalent linkage to protein carriers," NATO Adv. Study Inst. of Targeting of Drugs, Series A, Life Sciences, 47:19-30, Plenum Press, New York (1981)<sup>4</sup>  
[Exhibit 86];
87. Kourilsky et al., PCT Application No. WO 83/02276, published July 7, 1983<sup>4, 21</sup>  
[Exhibit 87];
88. Kourilsky et al., PCT Application No. WO 83/02277, published July 7, 1983<sup>4, 21</sup>  
[Exhibit 88];
89. Angerer et al., "An Electron Microscope Study of the Relative Positions of the 4S and Ribosomal RNA Genes In HeLa Cell Mitochondrial DNA," Cell 9:81-90 (1976)<sup>4</sup> [Exhibit 89];
90. Scherberg, U.S. Patent No. 4,260,737, issued April 7, 1981<sup>4</sup> [Exhibit 90];
91. Mackey et al., "Preparation and Characterization of Highly Radioactive in Vitro Labeled Adenovirus DNA and DNA Restriction Fragments," Biochemistry, 16:4478-4482 (1977)<sup>4</sup> [Exhibit 91];

92. Zhenodarova et al., "Spin-labeled Derivatives of Oligoribonucleotides as Spin Probes for Studying the Mechanism of the Effect of Enzymes," Chemical Abstracts, Vol. 91, 1979, pg. 303, Abstract No. 85951n<sup>4</sup> [Exhibit 92];
93. Institute of Biophysics et al., Soviet Union Patent Application A 659 573, April 30, 1979<sup>4,6</sup> [Exhibit 93];
94. Crea, U.S. Patent No. 4,310,662, issued January 12, 1982<sup>4</sup> [Exhibit 94];
95. Salam et al., "Synthesis of Nucleoside 5'-( $\beta$ -D-Glucopyranosyl Monophosphates) by the Sugar Ortho Ester Route," Carbohydrate Research, 102:139-146 (1982)<sup>4</sup> [Exhibit 95];
96. Salam et al., "Synthesis of Acetylated  $\alpha$ - and  $\beta$ -L-Fucosyl Esters of Nucleoside 5'-Monophosphates by the Orthoester Route," Nucleosides & Nucleotides, 1:155-161 (1982)<sup>4</sup> [Exhibit 96];
97. Gohlke et al., European Patent Application No. O 061 762 A2, published October 6, 1982<sup>4</sup> [Exhibit 97];
98. Kang et al., European Patent Application No. O 061 760 A1, published October 6, 1982<sup>4</sup> [Exhibit 98];
99. Kang, European Patent Application No. O 061 761 A1, published October 6, 1982<sup>4</sup> [Exhibit 99];
100. Sela et al., German Patent Application No. DE-A-25-07-901, published September 10, 1970<sup>4,26</sup> [Exhibit 100];
101. Theurer, German Patent Application No. DE-A-18-14-134, published January 28, 1971<sup>4,26</sup> [Exhibit 101]; and
102. Theurer, German Patent Application No. DE-A-16-17-886, published September 2, 1976<sup>4,26</sup> [Exhibit 102].

**Enz-5(D8)(C2)**

Of the one hundred and two (102) above-submitted documents, twenty-seven (27) documents (Exhibits 1-27) were cited in the instant specification; fifty-five (55) documents (Exhibits 28-78, 82-83 and 87-88) were cited or made of record in the prosecution of related applications; and thirty (30) documents (Exhibits 31, 38-41 and 78-102) were cited by the European Patent Office in the prosecution of the six (6) corresponding European applications, namely application numbers: 83106112.2 which issued as European Patent No. 0 097 373 B1, 0 285 057 A2, 0 285 950 A3, 0 302 175 A3, 0 286 898 A3, 0 285 058 A3, published October 10, 1992, October 5, 1988, October 12, 1988, February 8, 1989, October 19, 1988 and October 5, 1988, respectively.

A completed Form PTO-1449 listing the above-submitted documents is also attached hereto as Exhibit 103.

In Applicants' February 3, 1995 Amendment Under 37 C.F.R. §1.115, filed in the parent (Serial No. 07/954,772, filed on September 30, 1992) their attorney indicated that and IDS including complete copies of all art-related documents would be submitted as soon as indication was received that the parent was revived.

By this voluntary citation of art, Applicants and their attorney are requesting that the documents be made of record in the instant application.

The above citation of references is not a representation that these documents constitute a complete or exhaustive listing, nor that the above listing necessarily includes the closest or most relevant references, nor are these documents necessarily a complete listing of all references known to Applicants or their attorney. It is simply a voluntary citation of references made in good faith, which is not intended to serve in any way as a substitute for the Examiner's own search.

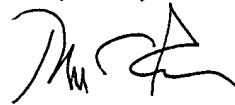
In view of the general and specific features described and claimed in the present application, Applicants respectfully submit that the present invention is neither suggested nor disclosed by the documents referred to above and is thus patentably distinct thereover.

Applicants do not believe, and do not submit, by the citation of these references, that these references, either by themselves or in combination with other references, render the invention prima facie obvious under the new duty of disclosure rules.

Applicants respectfully request that the Examiner make the above-submitted documents of record in the instant application. Applicants further request that the Examiner consider these documents as any of them may relate to the instant application.

The fee under 37 C.F.R. §1.17(p) for filing this Information Disclosure Statement is \$200.00. The Patent and Trademark Office is hereby authorized to charge the amount of this fee (and any other fees in connection with this IDS) to Deposit Account No. 05-1135, or to credit any overpayment thereto.

Respectfully submitted,



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Footnotes

1. Cited in the specifications of the following nineteen (19) U.S. Patent Applications:
  - 1) 06/391,440, filed June 23, 1982;
  - 2) 06/674,352 filed November 21, 1984;
  - 3) 07/140,980 filed January 5, 1988;
  - 4) 07/685,982 filed April 15, 1991;
  - 5) 07/957,549 filed October 6, 1992;
  - 6) 07/539,279 filed June 15, 1990;
  - 7) 07/962,381 filed October 16, 1992;
  - 8) 07/097,571 filed September 14, 1987
  - 9) 08/125,492 filed September 28, 1993;

- 10) 07/532,704 filed June 4, 1990, which application issued as U.S. Patent No. 5,241,060 on August 31, 1993;
  - 11) 07/960,071 filed October 13, 1992;
  - 12) 08/046,004 filed April 9, 1993;
  - 13) 07/567,039 filed August 13, 1990, which application issued as U.S. Patent No. 5,260,433 on November 9, 1993;
  - 14) 07/548,348 filed July 2, 1990;
  - 15) 07/954,772 filed September 30, 1992;
  - 16) 07/096,986 filed September 14, 1987;
  - 17) 07/531,953 filed June 1, 1990;
  - 18) 07/532,461 filed May 31, 1990;
  - 19) 07/520,682 filed May 8, 1990.
2. Cited in an Office Action dated September 12, 1991 in connection with the prosecution of U.S. Patent Application Serial No. 07/685, 982 filed April 15, 1991;
  3. Cited in an Office Action dated February 18, 1993 in connection with the prosecution of U.S. Patent Application Serial No. 07/685,982 filed April 15, 1991;
  4. Cited by the European Patent Office.
  5. This document is not available.
  6. An English abstract of this patent or patent application is not available..
  7. Cited in an Office Action dated October 16, 1990 in connection with the prosecution of U.S. Patent Application No. 07/140,980 filed January 5, 1988.
  8. Cited in an Office Action dated February 20, 1986 in connection with the prosecution of U.S. Patent Application No. 06/674,352 filed November 21, 1984.
  9. Cited in an Office Action dated December 13, 1993 in connection with the prosecution of U.S. Patent Application No. 08/125,492 filed September 28, 1993.
  10. Cited in an Office Action dated October 13, 1989 in connection with the prosecution of U.S. Parent Application No. 07/097,571 filed September 14, 1987.
  11. Cited in an Office Action dated July 1, 1993 in connection with the prosecution of U.S. Patent Application No. 07/962,381 filed October 16, 1992.
  12. Cited in an Office Action dated October 1, 1991 in connection with the prosecution of U.S. Patent Application No. 07/532,704 filed June 4, 1990, which application issued as U.S. Patent No. 5,241,060 on August 31, 1993.
  13. Cited in an Office Action dated January 10, 1994 in connection with the prosecution of U.S. Patent Application No. 07/960,071 filed October 13, 1992.
  14. Cited in an Office Action dated October 30, 1991 in connection with the prosecution of U.S. Patent Application No. 07/567,039 filed August 13, 1990, which issued as U.S. Parent No. 5,260,433 on November 9, 1993.

15. Cited in an Office Action dated September 30, 1992 in connection with the prosecution of U.S. Patent Application No. 07/954,772 filed September 30, 1992.
16. Cited in an Office Action dated September 25, 1991 in connection with the prosecution of U.S. Patent Application No. 07/548,348 filed July 2, 1990.
17. Cited in an Office Action dated June 3, 1992 in connection with the prosecution of U.S. Patent Application No. 07/954,772 filed September 30, 1992.
18. Cited in an Office Action dated November 25, 1991 and in an Information Disclosure Statement Under 37 C.F.R. §§1.56 and 1.99 filed August 19, 1991 in connection with U.S. Patent Application No. 07/539,279 filed June 15, 1990.
19. Cited in an Office Action dated July 20, 1988 in connection with the prosecution of U.S. Patent Application No. 07/096,986 filed September 14, 1987.
20. Cited in an Office Action dated February 14, 1991 in connection with the prosecution of U.S. Patent Application No. 07/096,986, filed September 14, 1987.
21. Cited in an Information Disclosure Statement Under 37 C.F.R. §§ 1.56 and 1.99 filed February 13, 1992 in connection with the prosecution of U.S. Patent Application No. 07/096,986, filed September 14, 1987.
22. Cited in an Office Action dated March 22, 1991 in connection with the prosecution of U.S. Patent Application No. 07/531,953, filed June 1, 1990.
23. Cited in an Information Disclosure Statement Under 37 C.F.R. 1.99 filed September 23, 1991 in connection with the prosecution of U.S. Patent Application No. 07/531,953, filed June 1, 1990.
24. Cited in an Office Action dated October 3, 1991 in connection with the prosecution of U.S. Patent Application No. 07/532,461, filed May 31, 1990.
25. Cited in an Office Action dated January 3, 1992 in connection with the prosecution of U.S. Patent Application No. 07/520,682, filed May 8, 1990.
26. An English abstract of this document is included.
27. An English abstract of this document is not available.

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